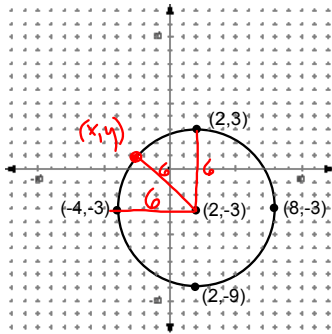


8-3 Circles

Circle—the set of all points, in a plane, a given distance (radius) from a fixed point (center)



$$6 = \sqrt{(x-2)^2 + (y+3)^2}$$

$$36 = (x-2)^2 + (y+3)^2$$

$$r^2 = (x-h)^2 + (y-k)^2$$

$$r^2 = (x-2)^2 + (y+3)^2$$

Equation of Circle

$$r^2 = (x - h)^2 + (y - k)^2$$

$r \rightarrow$ radius

$C(h, k)$

Find the equation of a circle with $C(-2, 5)$ and $r = 4$.

$$16 = (x+2)^2 + (y-5)^2$$

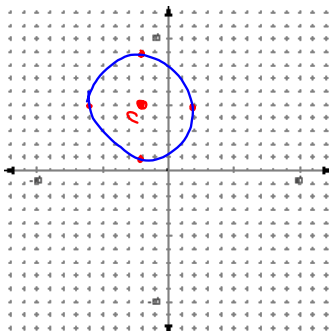
Find the center and radius.

$$1. x^2 + y^2 - 16 = 0$$

$$x^2 + y^2 = 16$$

$$C(0, 0) \quad r = 4$$

Graph it.



$(x - 0)^2$

Find the center and radius.

2. $x^2 + y^2 + 8y = 0$

$$x^2 + y^2 + 8y + 16 = 16$$

$$x^2 + (y + 4)^2 = 16$$

$$C(0, -4)$$

$$r = 4$$

Complete
the
square
for x

Find the center and radius.

3. $x^2 + y^2 - 4x + 2y - 4 = 0$

$$x^2 - 4x + 4 + y^2 + 2y + 1 = 4$$

$$(x - 2)^2 + (y + 1)^2 = 9$$

$$C(2, -1)$$

$$r = 3$$

Find the center and radius.

4. $x^2 + y^2 + 3x + 4y = 0$

General Form

$$x^2 + y^2 + ax + by + c = 0$$

$$a, b, c \in \text{Real}$$

Find the equation a circle with $C(2, -1)$ that goes through $(5, 3)$

$$r^2 = (x - 2)^2 + (y + 1)^2$$

$$(5 - 2)^2 + (3 + 1)^2$$

9 + 16

$$r^2 = 25$$

$$25 = (x - 2)^2 + (y + 1)^2$$

Find the equation a circle with $C(4, 3)$ that goes through $(8, 12)$

$$97 = (x - 4)^2 + (y - 3)^2$$

Find the equation a circle with diameter endpoints $(-5, -1)$ and $(-1, -1)$

$$M\left(\frac{-5 + -1}{2}, \frac{-1 + -1}{2}\right)$$

$$C(-3, -1)$$

$$r^2 = (x + 3)^2 + (y + 1)^2$$

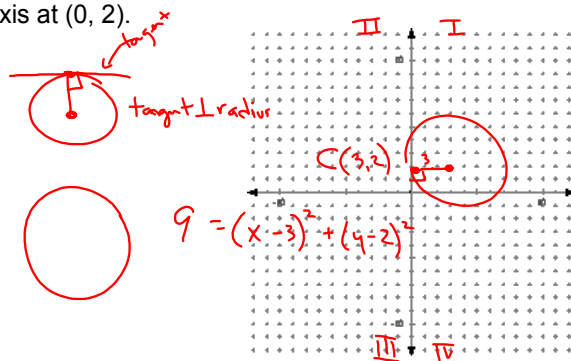
$$(-1 + 3)^2 + (-1 + 1)^2$$

$$r^2 = 4$$

$$4 = (x + 3)^2 + (y + 1)^2$$

Find the equation a circle with diameter endpoints $(3, -4)$ and $(7, 2)$

Find the equation a circle, whose center is in quadrant I, with a radius of 3 and is tangent to the y-axis at (0, 2).



$$9 = (x-3)^2 + (y-2)^2$$

HW

p429-430

16, 17, 19-21, 24, 27, 33, 34, 39,
43, 47